

WHAT IS CLAIMED IS:

1. A method for regenerating *Acacia mangium* comprising:
 - a) inducing callus formation from an explant;
 - b) culturing said callus to produce adventitious buds;
 - c) culturing said adventitious buds to elongate and produce pinnate leaves; and
 - d) culturing elongated buds of step (c) such that they produce roots and become plantlets.
2. The method of claim 1 wherein seeds are cultured to produce said explant.

The method of claim 1 wherein said explant is selected from the group consisting of hypocotyls, cotyledons, leaves, petioles and stems.

The method of claim 1 wherein said explant is cultured on a medium comprising MS medium supplemented with an auxin and a cytokinin.

The method of claim 4 wherein said auxin is present at 0.5-2.0 mg/L and said cytokinin is present at 0.5-3.0 mg/L.

6. The method of claim 4 wherein said auxin is selected from the group consisting of 2,4-D and α -naphthaleneacetic acid and wherein said cytokinin is selected from the group consisting of kinetin and 6-benzylaminopurine.

7. The method of claim 1 wherein said callus is cultured on a medium comprising MS basic medium supplemented with a) thidiazuron, b) indole acetic acid, c) casein enzymatic hydrolysate, d) L-ascorbic acid, e) L-glutamine, f) L-asparagine, g) L-proline, h)sucrose and i) agar or phytigel.

8. The method of claim 1 wherein said adventitious buds are cultured on a medium comprising MS medium supplemented with a) thidiazuron, b) casein enzymatic hydrolysate, c) L-ascorbic acid, d) L-glutamine, e) L-asparagine, f) L-proline, g) sucrose and h) agar or phytigel.

9. The method of claim 1 wherein said elongated buds are cultured on a medium comprising 1/2 MS basic medium supplemented with a) α -naphthaleneacetic acid, b) kinetin, c) casein enzymatic hydrolysate, d) L-ascorbic acid, e) L-glutamine, f) L-asparagine, g) L-proline, h) sucrose and i) phytigel.
10. The method of claim 1 wherein said explant has been transformed.
11. A method for regenerating *Acacia mangium* comprising:
a) culturing auxiliary buds from an *Acacia mangium* tree to produce adventitious buds comprising phyllodes;
b) subculturing said adventitious buds comprising phyllodes to produce adventitious shoots;
c) culturing said adventitious shoots.
12. The method of claim 11 wherein said culturing of auxiliary buds is performed on a medium comprising MS basic medium supplemented with a) α -naphthaleneacetic acid, b) 6-benzylaminopurine, c) casein enzymatic hydrolysate, d) L-ascorbic acid, e) L-proline, f) L-asparagine, g) L-glutamine, h) sucrose, and i) phytigel or agar.
13. The method of claim 11 wherein said subculturing of adventitious buds comprising phyllodes is performed on a medium comprising MS basic medium supplemented with a) 6-benzylaminopurine, b) casein enzymatic hydrolysate, c) L-ascorbic acid, d) L-glutamine, e) L-asparagine, f) L-proline, g) sucrose and h) phytigel or agar.
14. A method of transforming *Acacia mangium* with a gene of interest comprising the steps of:
a) activating *Agrobacterium tumefaciens* comprising said gene of interest to form activated *Agrobacterium tumefaciens*;
b) preculturing an explant of *Acacia mangium* to yield a precultured explant;
c) co-cultivating said activated *Agrobacterium tumefaciens* and said precultured explant to produce infected explants;

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- d) culturing said infected explants to induce callus and adventitious buds; and
e) culturing said callus or adventitious buds on a selective medium.
15. The method of claim 14 wherein said preculturing of said explant is performed on a medium comprising MS basic medium supplemented with a) thidiazuron, b) indole-3-acetic acid, c) casein enzymatic hydrolysate, d) L-ascorbic acid, e) L-glutamine, f) L-asparagine, g) L-proline, h) sucrose and i) phytigel or agar.
16. The method of claim 14 wherein said explants are soaked in 0.5 M mannitol prior to the step of co-cultivating.
17. The method of claim 14 wherein said co-cultivating is performed on a medium comprising MS basic medium supplemented with a) thidiazuron, b) indole-3-acetic acid, c) casein enzymatic hydrolysate, d) L-ascorbic acid, e) L-glutamine, f) L-asparagine, g) L-proline, h) sucrose and i) phytigel or agar.
18. The method of claim 14 wherein said co-cultivating is performed in the dark.
19. The method of claim 14 wherein said selective medium comprises a medium comprising MS basic medium supplemented with a) thidiazuron, b) indole-3-acetic acid, c) casein enzymatic hydrolysate, d) L-ascorbic acid, e) L-glutamine, f) L-asparagine, g) L-proline, h) sucrose and i) phytigel or agar.
20. The method of claim 14 wherein said preculture is performed using a photoperiod of 16 hours light/8 hours dark.
21. The method of claim 14 wherein said culturing on selective medium is performed using a photoperiod of 16 hours light/8 hours dark.
22. The method of claim 14 wherein said explant is selected from the group consisting of stem, leaflet, petiole and bud.

23. A method for promoting elongation of transformed adventitious buds of *Acacia mangium* comprising transforming an *Acacia mangium* explant by the method of claim 14 and further comprising a step of addition of gibberellic acid to the culture medium following formation of adventitious buds.
24. A method for promoting pinnate leaf formation on transformed adventitious buds of *Acacia mangium* comprising transforming an *Acacia mangium* explant by the method of claim 14 and further comprising culturing adventitious buds which develop on a medium with gibberellic acid.
25. A method for promoting root formation from transformed adventitious buds comprising culturing transformed adventitious buds on a medium comprising 1/2 MS basic medium supplemented with a) α -naphthaleneacetic acid, b) kinetin, c) casein enzymatic hydrolysate, d) L-ascorbic acid, e) L-glutamine, f) L-asparagine, g) L-proline, h) sucrose and i) phytagel.
26. The method of claim 25 wherein said culturing is performed using a 16 hour light/8 hour dark photoperiod.
27. The method of claim 25 wherein said culturing is performed at 28°C.
28. A method of preparing transgenic *Acacia mangium* cells comprising the steps of a) preculturing stem pieces of *Acacia mangium* in a culture medium; and b) cocultivating said stem pieces of step (a) with activated *Agrobacterium tumefaciens*.
29. The method of claim 28 wherein said preculturing is performed for 3 days using a photoperiod of 16/8 hours (light/dark).
30. The method of claim 29 wherein said preculturing is performed using 1800-2000 lux for the light cycles.

31. The method of claim 28 wherein said preculturing is performed at 28°C.
32. The method of claim 28 wherein said culture medium is AM-265.
33. The method of claim 28 wherein said stem pieces are soaked in a mannitol solution prior to cocultivating with *Agrobacterium tumefaciens*.
34. The method of claim 28 wherein said activated *Agrobacterium tumefaciens* were prepared by growing them in induction medium.
35. The method of claim 34 wherein said activated *Agrobacterium tumefaciens* were prepared by growing them in the dark.
36. The method of claim 34 wherein said activated *Agrobacterium tumefaciens* were prepared by growing them at 28°C.
37. A method of making transgenic *Acacia mangium* plants comprising;
 - a) preparing transgenic *Acacia mangium* cells by the method of claim 28;
 - b) culturing said cells in a selective medium,
 - c) adding a growth promoter; and
 - d) rooting buds which develop.
38. The method of claim 37 wherein said selective medium comprises an antibiotic.
39. The method of claim 37 wherein said culturing is performed for more than 1 month.
40. The method of claim 37 wherein said growth promoter is gibberellic acid.
41. A transgenic *Acacia mangium* cell.
42. A transgenic *Acacia mangium* plant.